

What Is Claimed Is:

1. A distance measuring device comprising:

5 light emitting means that projects a beam of light onto an object to be measured;

10 light receiving means that receives the light reflected on the object at a light receiving position corresponding to a distance to the object, and based on the light receiving position, outputs a long-range side signal that increases in value as the object is positioned further away from the distance measuring device at a certain intensity of the received light, and a short-range side signal that increases in value as the object is positioned closer to the distance measuring device at a certain intensity of the received light;

20 calculation means that calculates a ratio between said short-range side signal and said long-range side signal to output an output ratio signal;

luminance measuring means that measures the luminance of an outside light;

25 threshold setting means that adjusts an infinity determination threshold value such that said infinity determination threshold value is

set at the value corresponding to the further position as the lower luminance is measured by said luminance measuring means, whereas said infinity determination threshold value is set at the value corresponding to the closer position as the higher luminance is measured by said luminance measuring means; and

conversion means that compares said output ratio signal with said infinity determination threshold value so as to determine whether the value of said output ratio signal corresponds to the shorter range side than the value of said infinity determination threshold value or not, then in the former case converts said output ratio signal into a distance signal using a predetermined conversion formula, and in the latter case converts said output ratio signal into a predetermined distance signal having a fixed value.

2. A distance measuring device comprising:

light emitting means that projects a beam of light onto an object to be measured;

light receiving means that receives the light reflected on the object at a light receiving position corresponding to a distance to

the object, and based on the light receiving position, outputs a long-range side signal that increases in value as the object is positioned further away from the distance measuring device at a certain intensity of the received light, and
5 a short-range side signal that increases in value as the object is positioned closer to the distance measuring device at a certain intensity of the received light;

10 clamping means that compares said long-range side signal with a clamp signal, when said long-range side signal is larger than said clamp signal in value, outputs said long-range side signal; and when said long-range side signal is
15 smaller than said clamp signal in value, outputs said clamp signal;

calculation means that calculates a ratio between said short-range side signal and a signal output from said clamping means to output an
20 output ratio signal;

luminance measuring means that measures the luminance of an outside light;

threshold setting means that adjusts an infinity determination threshold value such that
25 said infinity determination threshold value is set at the value corresponding to the further

position as the lower luminance is measured by
said luminance measuring means, whereas said
infinity determination threshold value is set at
the value corresponding to the closer position as
5 the higher luminance is measured by said
luminance measuring means; and

conversion means that compares said output
ratio signal with said infinity determination
threshold value so as to determine whether the
10 value of said output ratio signal corresponds to
the shorter range side than the value of said
infinity determination threshold value or not,
then in the former case converts said output
ratio signal into a distance signal using a
15 predetermined conversion formula, and in the
latter case converts said output ratio signal
into a predetermined distance signal having a
fixed value.

3. The distance measuring device
20 according to claim 1 wherein, when the luminance
of the outside light measured by said luminance
measuring means is lower than a predetermined
first luminance level, said threshold setting
means sets up the infinity determination
25 threshold value at a first level value: and when
the luminance of the outside light is higher than

said first luminance level, sets up the same at a second level value corresponding to the position that is closer to said distance measuring device than the position associated with the first level value.

4. The distance measuring device according to claim 2 wherein in case the value of said output ratio signal corresponds to the shorter range side than the value of said infinity determination threshold value,

said conversion means

when the value of said output ratio signal corresponds to the shorter range side than the value of a clamping effect determination reference level, converts said output ratio signal into the distance signal using a first conversion formula,

when the value of said output ratio signal corresponds to the longer range side than the value of said clamping effect determination reference level and the luminance of the outside light measured by said luminance measuring means is higher than a predetermined second luminance level, converts said output ratio signal into the distance signal using said first conversion formula,

when the value of said output ratio signal corresponds to the longer range side than the value of said clamping effect determination reference level and the luminance of the outside light measured by said luminance measuring means is lower than the second luminance level, converts said output ratio signal into the distance signal using a second conversion formula, and

wherein said first conversion formula converts said output ratio signal into a distance signal corresponding to the further position from said distance measuring device than said second conversion formula does.

5. The distance measuring device according to claim 4, wherein said clamping effect determination reference level is defined by using the object with standard reflectance.

6. The distance measuring device according to claim 5, wherein said reflectance is 36%.